CHILD RESISTANT VISIBLE BLISTER END CAP

This application claims the benefit of U.S. Provisional Patent Application No. 60/534,386, filed January 7, 2004.

BACKGROUND OF THE INVENTION

Child resistant caps are required on medications. The child resistant caps should be difficult to open accidentally or with random movements by persons or children who are not familiar with instructions for the opening of the caps. On the other hand the child resistant caps should be relatively easy to open by persons who have been able to read and understand the opening directions or who have been instructed in the proper opening techniques.

At the same time, it is difficult to recall whether medications have been taken. The difficulty is increased by newer medications, which have longer times between doses.

Needs exist to provide child resistant caps for medications, which display indications of dosage history or reminders that a dose or doses of medications need to be taken. The displays should be relatively easy to read and understand by adults, but should be difficult to open by children to retrieve the doses. At the same time it is important to make medications and doses immediately available for access to the medications by adults who have been reminded of their need.

Needs exist to provide reminders for taking medications, which make the medications immediately available to knowledgeable adults, but which are resistant to opening by children. Needs exist for improved child resistant caps, which are difficult to open by children, and which are relatively to open by adults.

SUMMARY OF THE INVENTION

The present invention provides caps for holding medications, preferably in blisters on display outside of a container to serve as reminders to take medications or to acquaint new users of the medications with the unique appearance, shapes and colorations of the medications.

In a preferred form of the invention the medication is packaged in a blister, which is displayed and securely held in a child resistant gripper on the top of the package. The blister bubble is made of a strong plastic material, which is sufficiently, rigid to hold its shape and which is difficult to tear or puncture without a sharp tool. The individual blister is displayed with the blister exposed through an opening of a holder. The base flange of the blister is secured under the frame around the opening of the holder. The fracturable, tearable, puncturable or friable backing for the blister through which the medication is conventionally removed is held tightly against the bottom of the cap. The holder makes sure that the medication holding blister and the medication within the blister cannot be inadvertently obtained. Precise manipulations are required to remove the blister package, and the blister package must be removed from its entrapment between the holder and the end cap before the backing on the blister can be opened to access the medicine.

The manipulations are simple but are complex to understand by a child. If a child is able to remove the end cap from the container, access to the medication in the blister remains restricted. One must pinch both opposite raised ends of the holder inward while lifting the holder perpendicularly away from the end cap to remove the holder from the end cap. Those motions move the locking ribs on end walls of the holder inward and out of engagement with tops of openings in the complementary end walls of the end cap collar. The interfitting vertical

walls of the fixed end cap collar and vertical walls of the holder which are positioned within the collar prevent removing the holder by simply pressing inward on one raised end and trying to tip the holder out of the end cap.

In preferred embodiments, another coordinated operation is required to remove the holder from the end cap to access the blister and its contents. Opposite ends of the end cap must be compressed and squeezed toward each other to warp the end cap and to move sidewalls of the end cap outward. That motion moves locking openings in the sidewalls outward away from engagement with locking lugs, which extend outward from sidewalls of the holder.

This invention is child resistant, although the pill is displayed on the outside of the secondary package.

The display of the pill on the outside of the package can be a quick reference to the patients, because they can visually acknowledge whether they have taken the required medication at the appointed time. End cap components display the pill.

The general purpose of the invention, and the problem it is intended to solve is the creation of a child resistant package with medication being secured and displayed on the outside of the secondary package. The medication is primarily sealed in a single or multiple cavity blister package. The child resistant CR end cap prevents access to contents if a defined sequence of manipulations is not performed. The child resistant end cap assembly is combined with a container and or open-ended sleeve.

The invention has a sleeve and plastic end cap components. The sleeve is formed with a sheet of printable material, such as plastic and paperboard. Injection molding forms end cap components. The end caps and sleeve can be in any matching shape and form, such as rectangular, round or oval shapes.

There are three different end cap components. In the Figures, they are marked as components 10, 20 and 30, respectively.

Component 10 is the locking component used to secure the blister(s). Component 10 is formed as a well-like cavity with an aperture at the bottom. It has at least one flex-tab that interlocks with the locking features on component 20.

Component 20 is the end cap that perfectly fits at the top of the sleeve. It has four walls protruding upwards on one side to form a cavity, which allows the blister medication and component 10 fitting within the walls perfectly. The medication is sandwiched in between component 10 and the cavity on component 20. There is at least one slot on the protruded wall, which allows the locking of the flex-tab from component 10. By pushing the flex-tab(s) from component 10 inward and lifting it up, patients can retrieve the medication beneath. The bottom surface of the end cap can be flat or can be conformed into any appropriate shape.

Component 30 is the end cap base, which perfectly fits at the bottom of the sleeve. The ribs run across the bottom of the end cap and are used for strengthening the structure. The top surface of component 30 can be flat or can be conformed in different shapes accordingly.

Patients can simply lift up end cap 20, in order to retrieve content such as literature, coupons or promotional samples or other medications from the closed container of which does not require any child resistant feature.

In other forms of the invention the medications are packaged in individual blisters on individual fractural backs for opening to remove the medication in a blister. Alternatively the blister are individual blisters mounted on perforated strips or cards so that individual blisters may be separated from the strips or cards and placed in the child resistant reminder package to display the medication as a reminder to take the next dose.

These and further and other objects and features of the invention are apparent in the disclosure, which includes the above and ongoing written specification, with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of the container, end cap, single blister package, and locking component, which secures the blister on the end cap.

Figure 2 is an exploded perspective view of the container, end cap, single blister package, and locking component, which secures the blister on the end cap.

Figure 3 is a top exploded perspective view of the end cap, single blister package, and locking component, which secures the blister on the end cap.

Figure 4 is a bottom exploded perspective view of the end cap, single blister package, and locking component, which secures the blister on the end cap.

Figure 5 is a bottom perspective view of the end cap, showing ends of the single blister package, and locking component, which secures the blister on the end cap.

Figure 6 is a top plan view of the end cap, single blister package, and locking component, which secures the blister on the end cap.

Figure 7 is a cross-sectional view of the container, end cap, single blister package, and locking component which secures the blister on the end cap, showing those parts as well as the bottom cap in cross section taken in the middle across the narrow dimension of the container.

Figure 8 is a bottom view of the bottom end cap, showing the strengthening ribs extending across the bottom of the bottom end cap.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention, as shown in Figures 1 – 8, provides containers 1 having locks 10 and upper end caps 20 for holding medications, preferably in blisters 3 on display outside of a containers 1 to serve as reminders to take medications or to acquaint new users of the medications with the unique appearance, shapes and colorations of the medications.

In a preferred form of the invention the medication 5 is packaged in a blister 3, which is displayed and securely held in a child resistant gripper 10 on the top of the end cap 20 on the package. The blister bubble 7 is made of a strong plastic material, which is sufficiently rigid to hold its shape and which is difficult to tear or puncture without a sharp tool. The individual blister 3 is displayed with the blister exposed through an opening 11 of holder 10. The base flange 9 of the blister is secured under the frame 13 around the opening 11 of the holder 10. The fracturable, tearable, puncturable or friable backing for the blister through which the medication 5 is conventionally removed is held tightly against the bottom 21 of the end cap 20. The holder 10 makes sure that the medication holding blister 3 and the medication 5 within the blister cannot be inadvertently obtained. Precise manipulations are required to remove the blister package, and the blister package 3 must be removed from its entrapment between the holder 10 and the end cap 20 before the backing on the blister can be opened to access the medicine.

The manipulations are simple but are complex to understand by a child. If a child is able to remove the end cap 20 from the container 1, access to the medication in the blister remains restricted. One must pinch both opposite raised ends 15 of the holder inward while lifting the holder 10 perpendicularly away from the end cap 20 to remove the holder from the end cap. Those motions move the locking ribs 17 on end walls 19 of the holder 10 inward and out of engagement with tops 23 of openings 25 in the complementary end walls 27 of the end cap collar

29. The interfitting vertical walls 27 of the fixed end cap collar 29 and vertical walls 19 of the holder 10, which are positioned within the collar 29 prevent removing the holder 10 simply by pressing inward on one raised end 15 and trying to tip the holder 10 out of the end cap collar 29. The holder 10 has slots 41 extending downward from the top 43 and extending slightly inward in the base 45 to permit flexibility of the end walls 19 so that they may be flexed inward to move the locking ribs inward away from the tops of the locking openings 25 for removing and for replacing the holder 10 in the collar 29 on the end cap 20.

In preferred embodiments, another coordinated operation is required to remove the holder 10 from the end cap 20 to access the blister 3 and its contents. Opposite ends 51 of the end cap must be compressed and squeezed toward each other to warp the end cap 20 and to move sidewalls 53 of the end cap outward. That motion moves locking openings 55 in the sidewalls 53 outward away from engagement with locking lugs 57, which extend outward from sidewalls 59 of the holder 10. The locking lugs have ramps 61 which allow the snapping of the lugs 57 into the openings 55 in the end cap sidewalls 53 when assembling the holder 10 in the end cap 20.

This invention is child resistant, although the pill is displayed on the outside of the secondary package.

The display of the pill in blister 3 on the outside of the package 1 can be a quick reference to the users, because they can visually acknowledge whether they have taken the required medication at the appointed time. End caps locking holders 10 display the blisters 3 and the pill 5.

The general purpose of the invention, and the problem it is intended to solve is the creation of a child resistant package 1 with the medication 5 being secured and displayed on the outside of the secondary package. The medication is primarily sealed in a single or multiple

cavity blister package 3. The child resistant CR end cap 20 prevents access to contents if a defined sequence of manipulations is not performed. The child resistant end cap assembly 20 is combined with a container 1 and or open-ended sleeve.

The invention has a sleeve 71 and plastic end cap 20, 30 components. The sleeve is formed with a sheet of printable material, such as plastic and paperboard. Injection molding forms end cap components. The end caps and sleeve can be in any matching shape and form, such as rectangular, round or oval shapes.

There are three different upper end cap components. In the Figures, they are marked as components 10, 20 and 30, respectively.

Component 10 is the locking component used to secure the blister(s) 3. Component 10 is formed as a well-like cavity with an aperture at the bottom. It has at least one flex-tab that interlocks with the locking features on component 20.

Component 20 is the end cap that perfectly fits the top 73 of the sleeve 71. End cap 20 has four walls 27, 77 protruding upwards on one side to form a cavity or collar 29, which allows the blister medication-locking component 10 to fit precisely within the walls 27, 77. The medication 5 is in a blister 3 sandwiched in between component 10 and the cavity 29 on component 20. There is at least one slot 41 on the protruded wall 15, which allows the locking of the flex-tab holder from component 10. By pushing the flex-tab(s) 15 from component 10 inward and lifting it up, patients can retrieve the medication 5 in the bubble 3 beneath the locking holder 10. The bottom surface 79 of the end cap can be flat or can be conformed into any appropriate shape.

Component 30 is the end cap base, which perfectly fits at the bottom 75 of the sleeve. The ribs 81 run across the bottom 83 of the end cap 30 and are used for strengthening the

structure. The top surface of bottom end cap component 30 can be flat or can be conformed in different shapes accordingly.

Patients can simply lift up end cap 20, in order to retrieve content such as literature, coupons or promotional samples or other medications from the closed container of which does not require any child resistant feature.

In other forms of the invention the medications are packaged in individual blisters on individual fractural backs for opening to remove the medication in a blister. Alternatively, the blister are individual blisters mounted on perforated strips or cards in a child resistant container so that individual blisters may be separated from the strips or cards and placed in the child resistant reminder package to display the medication as a reminder to take the next dose.

While the invention has been described with reference to specific embodiments, modifications and variations of the invention may be constructed without departing from the scope of the invention.